

**Remarks/Arguments**

This is a complete response to the Office Action mailed on September 29<sup>th</sup>, 2006 (Office Action) in which claims 1 and 3 were rejected and claims 2, and 4-12 were found to be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Claims 13-20 are withdrawn. Claim 1 is currently amended to incorporate the limitations of claim 3. Consequently, claim 3 has been canceled. Claims 1-2 and 4-12 are pending. The amendment to claim 1 and the cancellation of claim 3 have not been done to overcome a substantive rejection, but rather to more accurately claim what Applicants consider to be their invention. Applicants respectfully submit that the Office Action has not established a *prima facie* case of obviousness for claims 1-12 as originally filed. Reconsideration of the subject application and further examination is respectfully requested.

**35 USC § 103 Rejection**

**Claim 1**

Original claim 1 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6690850 (Greywall) in view of U.S. patent 6678056 B2 (Downs). Applicants respectfully traverse the rejection on the basis that the Office Action has failed to establish a *prima facie* case of obviousness for the following reasons: (I) there is no suggestion or motivation in the prior art to combine Greywall and Downs; (II) a person of ordinary skill in the art would have no reasonable expectation of success in combining Greywall and Downs; and (III) each and every claimed limitation is not found or suggested in the prior art of record.

**I. No Suggestion/Motivation to Combine.**

*Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. MPEP 2143.01(I)*

*The proposed modification cannot render the prior art unsatisfactory for its intended purpose. MPEP 2143.01(V)*

Applicants respectfully submit that there could be no objective reason for one of ordinary skill in the art to combine the teachings of Greywall and Downs because such a modification would render Greywall's spectral equalizer unsatisfactory for its intended purpose. Greywall teaches a movable reflective element that may be rotated about an axis of rotation such that the direction of a reflected outgoing optical signal is **nonparallel** to the direction of the incoming signal. (Greywall col 5, lines 12-20) Greywall utilizes this principle to attenuate the strength of a spectral component of a multiplexed signal. (Greywall col 5, lines 34-38) On the other hand, corner cube reflectors reflect incident light back in the direction of the source (i.e. incoming and outgoing signals are **parallel**). (page 1, lines 10-12) Thus, combining Downs' corner cube reflector with the movable reflective element of Greywall, as suggested by the Examiner, would cause Greywall's signal 114-1 to be reflected back in an optical path parallel to incoming signal 114-1's original path (i.e. back into the optical fiber without any attenuation), thereby defeating the purpose of Greywall: that the returning signal 114-1 be received "off-axis." (See Greywall Fig. 1 & col. 5, lines 20-29) Small movement of a corner cube reflector does not alter the path of a reflected signal. Due to the nature of a corner cube reflector, incident signals impinging on it would be reflected back in the direction from which they came in spite of multiple orientations of the corner cube reflector. Accordingly, the combination of Down's corner cube reflector with Greywall's device renders Greywall unsatisfactory for its intended purpose. References are not properly combinable if their intended function is destroyed.

Greywall taken as a whole, teaches away from the suggested combination because Greywall teaches the use of an array of moveable reflective elements to equalize power across a spectrum by selectively rotating the appropriate movable reflective elements. (Greywall col. 3, lines 2-8) The device of Greywall alters the angle of incidence of an incoming optical signal by moving the reflector in order to change the path of the reflected optical signal. Replacing the movable reflective elements with corner cube

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reflectors, as suggested, would result in a device that is incapable of equalizing power across a spectrum because selectively rotating a corner cube reflector would not allow the attenuation which forms the basis of Greywall's device.

For these reasons, Applicants submit that the Office Action has not provided valid motivation to combine the cited references and therefore, has not established a *prima facie* case of obviousness.

## II. No Reasonable Expectation of Success.

*The prior art can be modified or combined to reject claims as prima facie obvious as long as there is a reasonable expectation of success.* MPEP 2143.02 (emphasis added)

The Examiner maintains that, "it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the device of Greywall with the reflector of Downs for the purpose of producing a pair of interferogram beams in phase quadrature [citation omitted]." (Office Action pg. 3) Applicants respectfully submit that this is incorrect. No one with ordinary skill in the art would expect the combination of the corner cube reflector of Downs with the spectral equalizer of Greywall to accomplish such a purpose.

The purpose cited in the Office Action, that of producing a pair of interferogram beams in phase quadrature, could not be reasonably expected to succeed because the combination of the corner cube reflector of Downs and the Greywall device alone is not capable of producing a pair of interferogram beams in phase quadrature. In Downs, the production of a pair of interferogram beams in phase quadrature (phase difference of  $\pi/2$  radians) is accomplished by applying a phase-shifting coating to a beam splitter. (Downs col. 4, lines 23-33) The corner cube reflector of Downs merely serves to reflect—not produce a phase shift between interferogram beams.

Furthermore, as discussed above, the combination of Greywall and Downs does not equal the invention of the current application. Therefore, one of ordinary skill in the

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art could have no reasonable expectation of success of the combination of the corner cube reflector of Downs and the Greywall device.

### III. Every Limitation Not Disclosed.

*To establish prima facie obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art.** MPEP 2142.03 (emphasis added)*

The combination of Greywall and Downs does not teach or suggest all the limitations of original claim 1. For example, the following limitation is not disclosed in Greywall and Downs:

*three substantially planar reflectors arranged substantially mutually orthogonal to each other and wherein said planar reflectors comprise: a base reflector disposed substantially in the plane of said substrate; and first and second side reflectors operably coupled to said base reflector.*

Downs does disclose three planar reflectors mutually orthogonal to each other (a corner cube reflector), but there is no teaching in Downs of a base reflector ***disposed substantially in the plane of a substrate***. Greywall comprises a reflector on a substrate, but it is merely a single reflector and not part of three mutually orthogonal reflectors operably coupled together. Downs discloses a corner cube reflector but not a base reflector disposed in the plane of a substrate. (See Downs Figs. 8 & 9)

Regarding the biasing source of claim 1, the Office Action cites Greywall's elements 532A and 532B as being a biasing source. However, elements 532A and 532B are described in Greywall as mere electrodes—not as a biasing source for providing a modulated voltage to the base reflector. (Greywall col. 8, line 15; see also Fig. 13) The electrodes may function to channel a modulated voltage to a base reflector, but, by themselves, do not constitute a biasing source. By way of analogy, a garden hose by itself does not equal a water source. Further evidence that elements 532A and 532B are not a biasing source is found in Greywall's Fig. 13 and Greywall's specification.

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Apparently, elements 532A and 532B are merely a combination of Greywall's contact pads 1382 and electrically conductive traces 1384. (See Greywall col. 11, lines 14-17)

As such, Applicants submit that the combination of Greywall and Downs does not disclose all the limitations of original claim 1.

### Claim 3

Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6690850 (Greywall) in view of U.S. patent 6678056 B2 (Downs) as applied to claim 1, and further in view of U.S. patent 5991061 (Adams). Even though claim 3 has been canceled, the substance of claim 3 has been incorporated into amended claim 1 and Applicants consider it prudent to address the rejections raised against claim 3. Applicants respectfully traverse the rejection of claim 3 on the basis that the Office Action has failed to establish a *prima facie* case of obviousness because there is no suggestion or motivation in the prior art to combine Greywall/Downs and Adams, and Greywall teaches away from such a combination.

### No Suggestion/Motivation to Combine

*The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. MPEP 2143.01 III*

The Office Action maintains that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the devices of Greywall and Downs with the reflector of Adams for the purpose of controlling the phase of the optical field. (Office Action page 3) Applicants respectfully traverse the rejection. The "motivation" cited by the Office Action to combine Greywall/Downs with the reflector of Adams would not lead one having ordinary skill in the art to combine the composite reflector from the laser cavity of Adams with the MEMs spectral equalizer of Greywall and the interferometer of Downs because controlling the phase of the optical field within a laser cavity, as taught by Adams, bears little relation to selectively attenuating elements

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of a multiplexed signal (e.g. the purpose of Greywall). Using the current application as a blueprint to reconstruct the claimed invention out of isolated teachings in the prior art constitutes impermissible hindsight.

Furthermore, Greywall *teaches away* from combining Adam's composite reflector with Greywall's spectral equalizer because Greywall defines *reflective surface* as "a surface having a fixed or constant reflectivity." (Greywall col. 3, lines 62-63) Any inclusion of a reflector with alterable reflectivity in Greywall's device would have been contrary to the knowledge of those skilled in the art at the time of the invention as indicated by Greywall's express requirement of reflectors with constant reflectivity. Any combination of a reflective surface with alterable reflectivity and the device of Greywall would change the principle of operation of Greywall. Accordingly, no motivation exists in the prior art of record for combining Adams with the Greywall/Downs. Thus, no *prima facie* case of obviousness has been established regarding claim 3.

#### Claim Objection

Claims 2 and 4-12 were objected to as being dependent upon a rejected base claim. Applicants respectfully submit that the rejection of claim 1 has been traversed, and is in condition for allowance. Therefore, Applicants request that the objection to dependent claims 2 and 4-12 be withdrawn.

#### Conclusion

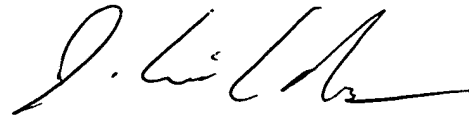
For the reasons stated above, Applicants respectfully submit that no *prima facie* case of obviousness has been established for claims 1 and 3 and that claims 1-2 and 4-12 are in condition for allowance.

The USPTO is hereby authorized to charge Deposit Account No. 50-0847 an amount of \$120.00 to pay the fees for an extension of time into the 1st month per 37 CFR 1.17(a). Please charge any deficit or credit any excess to Deposit Account No. 50-0847.

Application No. 10/758,721  
Inventor: Padilla

Navy Case # 83928

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "J. Eric Anderson", with a stylized flourish at the end.

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